Global COE (Center of Excellence) Program
“Informatics Education and Research Center for a Knowledge-Circulating Society”

Departments involved: Department of Social Informatics, Department of Intelligence Science and Technology, Department of Applied Mathematics and Physics, Department of Systems Science, Department of Communications and Computer Engineering, Academic Center for Computing and Media Studies (The main departments are underlined.)
Period: FY2007 to FY2011
Project leader: Professor TANAKA Katsumi, Department of Social Informatics
http://www.i.kyoto-u.ac.jp/gcoe/english.html

The objective of this program, initiated in FY2007, is to form an international education and research center that fosters Ph.D. students and young researchers in the field of social informatics, through research into information technology that will support “a knowledge-circulating society.” Academic fields studied at the Center include informatics, intelligent information processing, human interfaces, information retrieval, algorithm theory and humanistic social informatics. The program builds upon the results of the 21st Century Center of Excellence Program from FY2002-2006 and further develops them internationally. It concentrates on its goal of education and research into “information science and technology that will pave the way to a knowledge-circulating society” and seeks to open up new fields of study primarily at the Graduate School of Informatics, Kyoto University, melded together from many different areas.

Although advances in information technology have led to the formation of information systems that underpin our society, progress has not been without difficulties. Numerous technological and social issues have emerged — for example, the selection of the best approach to the human-machine interface (where the machines may be information systems or robots), the danger of acting on unreliable information, and the vulnerability of social information systems. We believe that these problems result from the circulation of knowledge being hindered throughout society due to a gap between information technology and people/society. Information becomes knowledge, and knowledge then becomes linked with other knowledge and cycles around through society — and wonderful things happen. The unimpeded cycling of knowledge among society, communities, organizations and individuals cannot be driven forward into the future by current engineering methodologies alone. Moreover, these issues will not be overcome by setting up teams of researchers divided up along functional lines. We believe that the way forward is to organize mixed teams of researchers from informatics and allied areas, and develop new research methodologies.

In this Global COE Program, the important aspects of information technology at the heart of the drive to promote knowledge circulation are human interfaces for knowledge communication, knowledge searching, collaboration which is the basis for the sharing of knowledge out in the field, and the computing infrastructure to support rapid and reliable communications.

We will set up four new education and research core areas: 1) Primordial Knowledge Model (informatics, brain science, and life science); 2) Field Informatics (informatics and social field studies); 3) Knowledge Search (informatics, management science, and intellectual property studies); and 4) Knowledge Grid Computing (algorithm theory and high-speed computing infrastructure). In these cores, collaborative work will be conducted in their respective fields. We will precisely position the cores on our roadmap to a knowledge-circulating society while promoting the formation of the Center and the education and study programs.

The Primordial Knowledge Model education and research core will investigate knowledge models in communication and conduct education and research regarding human interfaces and knowledge creation based on greater human understanding. The Field Informatics education and research core will focus on methodologies to build social information systems, based on collaboration with experts in the field. The Knowledge Search education and research core will focus its education and research programs on new search engines that can be used to search for reliable knowledge from various information sources, and the associated social systems and busi-
ness models. The Knowledge Grid Computing education and research core will focus its education and research programs on the building of high-speed and highly reliable computer infrastructure that will support all these endeavors. We will encourage these cores to work together through inter-core projects, and will aim to create an international education and research center of the highest level that will be involved with “information technology that will promote a knowledge-circulating society.”

We offer the following leadership training programs:

1. Public-proposal-based young leader training program with international development
   This training program is for younger teaching staff members employed by global COEs and Ph.D. students, in which they are encouraged to call for research projects, workshops, seminars and other courses run by managers and advisors and thus gain training in leadership as well as the opportunity to form international personal networks.

2. Seminars for improving strategic communication skills (in English and Japanese)
   These seminars are conducted in cooperation with communications companies that we have worked with successfully to offer training in presentation and negotiation skills both in English and Japanese, and curriculum development, with the objective of raising the communication skill levels that young researchers need.

3. International and social development of the multi-advisor system
   In this program, Ph.D. students are trained to be able to assess research in multiple disciplines, relying on advice from their graduate advisors, multiple educators, researchers and experts in their field, both in Japan and overseas.

4. Program for improvement in overseas hubs and economic assistance for foreign Ph.D. students
   This program has been designed to promote personnel exchanges and training through our hubs in the U.S., China, Thailand and other locations in Asia. The program will send educators, post-doctoral, and doctoral students to international joint research facilities (universities and corporate research facilities in the U.S., Europe and Asia) and will welcome post-doctoral students and work-training students from overseas, and provide economic assistance to foreign and domestic doctoral students.

5. Interdisciplinary projects in the education and research cores
   Interdisciplinary seminars and projects will be held in each of the education and research cores
The Center for Promotion of Informatics Education was approved for fiscal 2009 special funds from the Ministry of Education, Culture, Sports, Science and Technology to develop and implement a school-wide common information education program aimed at fostering innovative professionals for our knowledge society. The Center was thus set up within the Graduate School of Informatics at Kyoto University in fiscal 2009 to carry out this program.

In addition to formulating and implementing new common information education curriculums for faculties and graduate schools in this extremely advanced IT age, it also undertakes the task of developing teaching material contents as well as education and FD (faculty development) assistance systems for this purpose. Specifically, this involves developing educational materials in the three fields of information and computational science, information society system (information ethics, security, intellectual property, and social information), and innovation fundamentals (MOT, information business theory, IT service, and intelligent use of information), as well as implementing new courses throughout the school. In particular, the Center designs and introduces for graduate schools cross-curricular educational courses which did not exist in the past.

### Center for Promotion of Informatics Education

**Formulation and implementation of new university information education curriculum**

1. Formulation of core curriculum and development of educational material contents
   - Information science, computational science, information society system, and innovation fundamentals
2. Implementation of common information education curriculum for all faculties and graduate schools
   - Revision and provision of proven education programs for the whole school
   - Information science and computational science
   - Intellectual property, security, MOT, and information business theory
   - Development of lecture and educational material archiving and mobile browsing systems
   - Development of course management system for school-wide information education
   - Utilization of the developed systems for FD (faculty development) assistance

### Partner Organizations

- Academic Center for Computing and Media Studies
  - Information and computational science education
- Center for the Promotion of Excellence in Higher Education
  - Information and computational science education, IT Service Modeling
- Graduate School of Management
  - Basic education on innovation

*Also conducted in alliance with the Special Committee on Information Education and other faculties/graduate schools providing information courses at Kyoto University*

### Faculty Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>TANAKA Katsumi</td>
<td>Director, Graduate School of Informatics</td>
</tr>
<tr>
<td>NAKAMURA Satoshi</td>
<td>Deputy Director, Graduate School of Informatics</td>
</tr>
<tr>
<td>ASANO Yasuhiro</td>
<td>Associate Professor, Graduate School of Informatics</td>
</tr>
<tr>
<td>KIMURA Kinji</td>
<td>Associate Professor, Graduate School of Informatics</td>
</tr>
<tr>
<td>MAEGAWA Yoshikazu</td>
<td>Associate Professor, Graduate School of Informatics</td>
</tr>
<tr>
<td>YAHAGI Hideki</td>
<td>Associate Professor, Academic Center for Computing and Media Studies</td>
</tr>
<tr>
<td>INABA Rieko</td>
<td>Senior Lecturer, Graduate School of Informatics</td>
</tr>
<tr>
<td>YAMAKATA Yoko</td>
<td>Senior Lecturer, Academic Center for Computing and Media Studies</td>
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### Courses Provided

**School-wide Common Courses**

- Introduction to Information Analysis and Management
- Web Information Systems
- Introduction to Simulation Programming
- Information and Education
- Intelligent Use of Information Technology
- Theories on Technology Development
- Media Information Processing
- Media Information Processing: General Introduction
- Information and Society

**Educational Reform Courses (Master’s Program)**

- Information Analysis and Management
- Information Analysis and Management & Exercise
- Computational Science, Introduction
- Exercise on Computational Science A
- Theories on Technology Development
- Exercise on Computational Science B
- Information and Education
- Advanced Media Information Processing
- Information and Intellectual Property
- Computational Science, Advanced
- Theories of Service Modeling

**Contact**

Room 408 North Building, Academic Center for Computing and Media Studies, Kyoto University

Yoshida-Honnachi, Sakyo-ku, Kyoto 606-8501, JAPAN

E-mail: iedu-contact@dl.kuis.kyoto-u.ac.jp
IT specialist program to promote Key Engineers as security Specialists (IT Keys)

With the objective of training human resources capable of acting independently to plan information security measures in public and private organizations, we have set up a collaborative training program with four universities around the Kansai region that are involved with information sciences in order to systematically master techniques for managing organizations and the skills necessary for enacting general risk measures for information systems. We enthusiastically accept working professionals in order to train them to become practitioners fully capable of working in the field through courses that reflect the latest trends and practical, hands-on exercises conducted by instructors invited from organizations and companies.

Term: 2007-2010

Participating Universities: Nara Institute of Science and Technology, Kyoto University, Osaka University, Japan Advanced Institute of Science and Technology

Collaborating Companies: National Institute of Information and Communications Technology, The Research Institute of Information Security, Japan Computer Emergency Response Team Coordination Center, NTT Communications

Website: http://it-keys.naist.jp/

A certificate of completion for this program will be awarded to students who complete two or more courses (4 or more credits) from the basic curriculum offered by this graduate school; two advanced courses (4 credits) offered at the Campus Plaza Kyoto or Osaka University's Nakanoshima Center; and three practical courses (6 credits) offered while staying at the Wakayama Prefectural Information Exchange Center, the Hokuriku Research Center of the National Institute of Information and Communications Technology, etc.

Interested applicants should contact: it-keys@media.kyoto-u.ac.jp (Uehara)

Kyoto University Programs for Future International Leaders (K.U. PROFILE)

Kyoto University was designated as one of the hub universities for the "Project for Establishing Core Universities for Internationalization (Global 30)," initiated in 2009 by the Ministry of Education, Culture, Sports, Science and Technology. In this project, participating universities are called upon to provide quality education according to their respective functions and to create an environment that makes it easier for foreign students to study in Japan by establishing a system to provide lessons in English, improve the framework for accepting foreign students, and promote strategic international collaboration, etc. By assisting in the development of international hubs that represent Japan, the initiative will nurture, as its objective, skilled professionals capable of working on the international stage in an environment that allows native and foreign students to learn from each other.

At Kyoto University, the program is being implemented under the theme, "Kyoto University Programs for Future International Leaders (K.U. PROFILE)." Using its unique, cutting-edge study resources, the university provides education to foster future leaders who will address the modern issues confronting our global society.

Term: 2009-2013

K.U. PROFILE website: http://www.opir.kyoto-u.ac.jp/kuprofile/
International Courses website: http://www.g30.i.kyoto-u.ac.jp/

An International Course program has been set up in three departments within the Graduate School of Informatics: Department of Intelligence Science and Technology, Department of Social Informatics, and Department of Communications and Computer Engineering. The International Course program offers new courses taught in English, and provides some of the existing courses in English as well, in order to allow students to acquire master's and doctoral degrees using only English. English guidance is also now available in the administrative departments to assist foreign students in their studies and daily activities.

Contact: jyoho-kyomu@mail2.adm.t.kyoto-u.ac.jp (Student Affairs Division)
21st Century COE Program
“The formation of an informatics center to build the foundation for a knowledge-based society”

Departments involved: Department of Social Informatics, Department of Intelligence Science and Technology, Department of Applied Mathematics and Physics, Department of Systems Science, Academic Center for Computing and Media Studies (The main departments are underlined.)
Period: FY2002 to FY2006
Project leaders: Professor KANBAYASHI Yahiko, Department of Social Informatics (FY2002-2003)
Professor TANAKA Katsumi, Department of Social Informatics (FY2004-2006)
http://i.coe21.kyoto-u.ac.jp/index.html

Initiatives for Appealing Graduate School Education
“Information System Design in Cooperation with Society”
(Aiming to be a field-oriented IT graduate school education program)
Project leader: Professor ISHIDA Toru, Department of Social Informatics
Period: November 2005 – March 2007

This initiative set up education programs aimed to train people capable of designing information systems in close cooperation with society. In FY2006, the initiative held the practical Field Informatics Seminar and the Strategic Communication Seminar where students learned to apply their knowledge to practical applications (via courses conducted in Japanese and English). The Field Informatics Seminar included information MOT lectures, as well as several small-scale lectures held at a traditional Japanese house in Kyoto. The Strategic Communication Seminar had both Japanese and English courses. The English course, developed in cooperation with Berlitz, was for graduate students with linguistic abilities. The course content (including presentations, interviews and debates) was designed to raise the students’ communication skills. Students participated in the seminar in small groups. Patterned along similar lines, the Japanese course, developed in cooperation with the NHK Communications Training Institute, was for graduate students who already had adequate technical ability but needed to sharpen their communication skills.
Academic Programs

The Graduate School of Informatics provides graduate study programs that lead to Master’s and Doctoral degrees. Taking into account the many different aspects of Informatics, students are required to take several compulsory credits outside their own department as a way to encourage interdepartmental education.

Requirements for the Master’s Program

To receive a Master’s Degree, every student is required to take at least 30 credits, to submit a thesis in the student’s field of specialization, and to pass an examination based on the thesis. To encourage a well-rounded curriculum of study, students are asked to take subjects offered not only by one’s own department but by other departments as well.

Requirements for the Doctoral Program

A Doctoral degree requires original, high-quality research in an individual field. To receive a Doctoral Degree, students are required to take at least 6 credits from courses offered at this school and to pass an examination based on the submitted thesis.

The Number of Students to be Admitted by Department

<table>
<thead>
<tr>
<th>Department of Intelligence Science and Technology</th>
<th>Master’s Program</th>
<th>Doctoral Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Social Informatics</td>
<td>37</td>
<td>15</td>
</tr>
<tr>
<td>Department of Applied Analysis and Complex Dynamical Systems</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>Department of Applied Mathematics and Physics</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>Department of Systems Science</td>
<td>32</td>
<td>8</td>
</tr>
<tr>
<td>Department of Communications and Computer Engineering</td>
<td>42</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>189</td>
<td>60</td>
</tr>
</tbody>
</table>

Both non-Japanese and working professionals are eligible for admission into the graduate program. Doctoral students may enroll in this graduate school as part-time students concurrently with their professional responsibilities.

Entrance Examination

The academic year begins in April. In general, a Master’s degree requires two academic years of study, and a Ph.D. three years. Admission to graduate programs is granted to those individuals who have passed the entrance examination of the Graduate School of Informatics conducted by the relevant departments. The examination is held in August. Additional examinations may be held in February in the event of vacancies.

Applications for the International Course, in which the degree will be earned in a solely English-language medium, are also accepted in the departments of Intelligence Science and Technology; Social Informatics; Communications and Computer Engineering.

For further information, please contact:
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Tel. +81 75-753-5038
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Definition of Informatics

Informatics in Kyoto University is the study of information in natural and artificial systems.

Informatics studies the creation, recognition, representation, collection, organization, optimization, transformation, communication, evaluation and control of information in complex and dynamic systems.

Informatics has human, social, cognitive, biological, linguistic, computational, mathematical and engineering aspects. It includes systems science and communications engineering.

Informatics has close relations with a number of disciplines in the natural and human sciences. It is developed employing contributions from many different areas; in turn, it can contribute to their further development.

Interfaces to human and social areas, mathematical modeling and information systems are the three pillars of Informatics in Kyoto University.